Multiscale Analysis of observations of Turbulent Molecular Clouds

Curtis S. Gehman and William D. Langer

California Institute of Technology, Jet Propulsion Laboratory
4800 Oak Grove Dr., Pasadena, CA 91109

Abstract

We study the distribution of structure over varying size scales of several observations of the Perseus molecular cloud in order to understand the dynamical evolution of star forming clouds. Using a Laplacian pyramid transform, we analyze the structure of the emission maps aud determine the corresponding mass spectra dN/dM of substructures. We compare the resulting spectra of various types of observations and discuss implications. The results of the Laplacian pyramid technique are also compared to spectra resulting from other methods of analysis. Finally we consider the correspondence between the mass spectrum and the turbulent nature of molecular clouds.

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